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[Filed in category 253.-- Analyst]
[see p. 11, category 116.-- Analyst]

suffer a certain amount of damage. The seedlings must therefore be given time to grow strong enough to endure the temporary uprooting. They usually need from 30 to 40 days before they are ready for transplanting. Whenever early transplanting is necessary a technique is employed which is known in the Philippines as *dapog*. The puddled seedbed is completely covered with banana leaves, which are pressed slightly into the mud so that a thin layer of mud spreads over the leaves. On top of this is placed a layer, an inch thick, of rice hulls or finely cut straw. The whole is thoroughly soaked and sown with seeds. The banana leaves prevent the roots of the seedlings from growing into the ground and suffering the usual damage when transplanted, but the seedlings must be transplanted within two weeks after the sowing of the seed.

In the riparian marshes of Sumatra and Borneo—the *lebak* areas—all the land is flooded at the time when the rice seed should be put into the ground. The inhabitants of these districts, however, have found an ingenious solution to their problem: the floating seedbed. They build small rafts of bamboo, reed, banana stems, or the leaf-ribs of the sago palm, on which they place a layer of rush, or some other aquatic plant, and then a thick layer of fine mud. As the water level rises and falls the seedlings have a chance to develop on the float unharmed.

Numerous also are the techniques employed to supply wet-rice fields with the necessary water (see pp. 47–51). These reflect the nature of the terrain, the social organization, and the stage of technical development of the inhabitants. For it is obvious that the cultivation of wet rice on the plains of the Red River in Tongking would require very different techniques from those required on the steep mountain slopes of northern Luzon.

Culture, Types of Land Use, and Population Pressure

One of the most striking characteristics of Southeastern Asia is the great variation in the density of the population (Map, Fig. 18). This variation reflects differences in culture as well as differences in physical environment. The culture and social organization of a people are intimately linked to their technique and the intensity of their land use, which in turn guide the people in their selection of new land when it becomes necessary for them to seek new homes. The Cambodians, for example, when living in an environment similar to that of the Annamese, do not create the large rural settlements characteristic of areas inhabited by the latter.[28] Likewise, the Madurese prefer to settle in small hamlets or in isolated homesteads (*Einzelhof*) and to till unirrigated land, whereas the Javanese live in large villages and are by preference wet-field cultivators. Again, while the Bontocs and Ifugaos of northern Luzon build terraces and cultivate wet rice as their primary crop, the neighboring Apayaos, most of the Kalingas, the Tinggians, and the Gaddangs have so far resisted all attempts on the

[28] Gourou: L'utilisation du sol, 1940, p. 94.

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part of the government and of missionaries to introduce terracing and wet-rice cultivation but, instead, continue to practice shifting cultivation and to depend upon dry rice as their staple food.

Wherever we find shifting cultivation the density of population is low; on the other hand, permanent cultivation provides the basis for higher densities. The higher the density, the greater is the care bestowed upon the cultivation of the soil. The development of permanent-field cultivation, the construction of terraces on mountainsides and hillsides, the dyking and draining of plains, and other complex techniques associated with wet-rice cultivation are but expressions of a population density that demands an intensive utilization of the soil and a maximum production of food crops.

The areas where wet rice was first cultivated were probably hollows and small valleys and the well watered slopes of low hills rather than the great plains and wide valleys that are today the rice granaries of the world. The utilization of extensive plains and broad river valleys for the cultivation of wet rice requires a social organization unknown to the peoples who first began wet-rice culture.

It is thought that the cultivation of wet rice originated in days when the hoe and the dibble stick were the only agricultural tools, that is, before the animal-drawn plow reached Southeastern Asia. The broadcasting of seeds is held to be characteristic of plow culture, whereas the cultivators of wet rice in Monsoon Asia generally plant their rice seedlings in the manner of shifting cultivators,[29] a circumstance that would seem to support the hypothesis that the carabao and the plow were not a part of the original technique but were adopted later. Even today wet rice is raised in some parts of Southeastern Asia without the use of the plow. For example, peoples in central Celebes prepare their fields for cultivation by driving carabaos back and forth until the fields are thoroughly puddled.[30] In other areas where wet-rice fields are built on such steep slopes that it is impossible to get carabaos to the terraces, farmers are frequently obliged to till their land entirely by hand—employing only such tools as wooden spades and sticks, which may be shod with iron. The Ifugaos of northern Luzon, for example, have terrace walls reaching, in some cases, heights of 60 feet or more that can be scaled only by means of rocks jutting out from the faces of the walls.

Although most sedentary cultivators in Southeastern Asia make use of

[29] Although rice growers in other parts of the world generally use the broadcast method of sowing, one finds it in Southeastern Asia only as a rare exception. According to Copeland (*op. cit.*, p. 224) the *sabog*, or broadcasting method, is used in the Philippines over a rather limited area. This method produces lower yields but its advantages are "some saving of time, saving the labour of transplanting, and the possibility of maturing a crop with less water; rice grown directly in its place can get along with less water than transplanted rice." According to Kruyt ("De To Rongkong in Midden-Celebes," 1920, p. 380), the To Rongkong of central Celebes transplant their wet rice only in exceptional cases but usually broadcast it.

[30] Kruyt: "De To Seko in Midden-Celebes," 1920, p. 409.

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always sufficient land for the population without undue pressure on the forests. A result of British rule has been to increase the population and correspondingly to reduce the rest period of the soil. The consequences have been deforestation and soil erosion. For that reason the authorities have attempted to stop this mode of land use.

In Java shifting cultivation attracted the attention of the government as early as the beginning of the nineteenth century. It was practiced especially in the mountains. The fact that a shifting cultivator required more land than a peasant who cultivated the same piece of land year after year made shifting cultivation extremely undesirable to a colonial administration that wanted to use all available land for the production of cash crops—either under the "forced culture system" of 1830 to 1870[21] or under the private plantation system that has existed since 1870. This circumstance, together with an alarming increase in population, prompted the government to do everything possible to stop the practice of shifting cultivation in Java, and today it is found only in the quite thinly settled residency of Bantam in West Java.[22] In the Outer Islands, with their sparse population and large forest areas, it is widely practiced. But, in contrast to their predecessors, Dutch officials of recent times rarely use the term *Raubbau* for shifting cultivation. Instead they consider this form of land use justifiable if the abandoned fields revert to forest and have the possibility of regaining their former fertility. In the past fifteen years, however, warning voices have pointed out that in large parts of the Outer Islands ladang culture has become a source of destruction, for the forest is no longer being given an opportunity to recuperate.[23] Both agricultural and forestry officials have consequently become concerned over shifting cultivation. In 1930 Hagreis presented a paper on ladang culture before the congress of officials of the Agricultural Advisory Service in the Netherlands Indies.[24] At that time it was decided to appoint a special commission to study ladang culture.[25] The foresters, also, devoted a good deal of attention to the problem during their congress in 1937. In 1940 Van Beukering of the Department of Economic Affairs summarized the result of the ladang *enquête*.[26] He came to the conclusion that shifting cultivation is a logical and economically justifiable form of land use wherever there is a large amount of land available and a primitive economy exists. From a social point of view no objection can be raised if, after each occupation, the fertility of the soil is regained. There is no reason to insist upon more intensive forms of land use so long as the population density does not increase beyond 50 persons per square kilometer, or 130 persons per square mile. If at this density we

[21] From 1830 to 1870 the peasants of Java were forced, under the notorious "culture system," to devote part of their land and labor to producing crops for the government.
[22] Kools: Hoeman's, 1935.
[23] Gonggrijp: "Soil Management," 1938, pp. 397–404.
[24] Hagreis: "Ladangbouw," 1930, pp. 43–75 and 629–642.
[25] "Enquête betreffende het ladangvraagstuk," 1931, pp. 1022–1033.
[26] Van Beukering: Het ladangvraagstuk. Unpublished typescript, 1940.

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[See p. 27, category 116. -- Analyst]

1,500,000, or at the most 2,000,000, which would mean about 300,000 to 400,000 households. This number of households could hardly occupy such a large rây area as Gourou assumes.

In Formosa only the Malay tribes of the mountains in the eastern half of the island practice shifting cultivation. They number, according to estimates, about 150,000. From this we may assume that not more than 30,000 to 50,000 hectares are occupied annually by shifting cultivators.

In the Philippines it is unlawful to make caiñgins on public land without the permission of the Bureau of Forestry.[34] Permission will be given if the forest on the land involved is of no commercial value and if the caiñgero accepts the obligation to reforest his patch with seeds supplied by the forest service. Several hundred caiñgeros are brought annually before the justices of the peace, who in the past, because their sympathy was with the caiñgeros, were usually rather reluctant to fine the culprits (Table II). Nobody knows, of course, how many illegal caiñgins escape detection, but it is certain that they greatly outnumber those that are made with the permission of the foresters added to those that have been brought to the attention of the courts. Special consideration is given to the "non-Christian" tribes, for whom tracts of land have been set aside within which they continue their age-old system of cultivation. In Mindanao probably three-fourths of the population, from the primitive Manobos to the more advanced Moros, practice the caiñgin system of cultivation. Other regions where this system is practiced extensively are Mindoro, Cebu, southern Negros, and parts of Luzon—the central and eastern cordillera and the Camarines. About 10 per cent of the population of the Philippines obtain a part or all of their food from caiñgins, most of which are made either on private land or on land that belongs to non-Christian tribes who know no other form of agriculture.

Methods of Eliminating the Undesirable Aspects of Shifting Cultivation

In regions where the density of population exceeds 50 persons per square kilometer, shifting cultivation becomes wasteful and destructive. It is imperative in such areas that the system be either modified or else replaced by more conserving and, where possible, more intensive forms of land use. For most backward tribes this involves fundamental changes in their mode of life, religious ideas, and concepts of land rights.

In some instances it should suffice to adopt measures that eliminate the harmful or wasteful after effects of the system without requiring that this kind of land use be given up completely. Let us assume that we have a somewhat thinly settled region containing a forest that is not particularly valuable and the exploitation of which is impracticable or at present inexpedient. Deforestation and the spread of grasses are undesirable aspects

[34] Nano: "Kaiñgin Laws," 1939, pp. 87–92.

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na edulis Ker), sweet potato (*Ipomoea batatas* Poir.), taro (*Colocasia esculenta* Schott), *Curcuma* species, Goa bean (*Psophocarpus tetragonolobus* DC.), bitter cucumber (*Momordica charantia* L.), snake gourd (*Trichosanthes anguina* L.), Lima bean (large) (*Phaseolus lunatus* L.), Goa potato (*Dioscorea aculeata* L.), wild yam (*Dioscorea hispida* Dennst.), and sweet yam (*Dioscorea alata* L.). The middle story contains taller-growing plants, such as cassava (*Manihot utilissima* Pohl), citrus varieties such as *Citrus nobilis* Lour. and *Citrus aurantifolia* Swingle, papaya (*Carica papaya* L.), banana (*Musa* species), rose apple (*Eugenia aquea* Burm.), [illegible]ursop (*Anona muricata* L.). The upper story is formed by tall fruit trees such as coconut (*Cocos nucifera* L.), jackfruit (*Artocarpus integra* Merr.), sapodilla or chico (*Achras zapota* L.), pomelo (*Citrus maxima* Merr.), of which numerous forms, differing in size and color, are known in the Indies, *belinju* (*Gnetum gnemon* L.), mango (*Mangifera indica* L.), durian (*Durio zibethinus* Murr.), candlenut tree (*Aleurites moluccana* Willd.), tamarind (*Tamarindus indica* L.), *pete* (*Parkia speciosa* Hassk.), stinkbean tree (*Pithecellobium lobatum* Benth.), and *santol* (*Sandoricum koetjape* Merr.).

This list does not by any means include all the plants that appear in the gardens. The plants vary in number and type from region to region in accordance with differences in soil, climate (elevation), and the taste of the owners.

311 244 161 369

Estimates indicate that about 15 per cent of the cultivated land in Java and Madura is taken up by gardens. Unfortunately, there have been no detailed studies of garden culture outside of Java, although the products of the garden play an important role in the diet of all the peoples of Southeastern Asia. Terra, who compared garden culture in various districts of Java, found that the share of land allotted to gardens, together with the intensity of their cultivation, increases as the total amount of crop land per head decreases, down to the point where the average amount of crop land per head is only 0.15 hectare. Where the amount of land is even less than this the share of garden land decreases, although there is a tendency at first to increase the intensity of the garden culture. Close to the larger cities, the amount of crop land per person, together with the amount devoted to gardens and the intensity of the latter's cultivation, falls off to a minimum since the population here has supplementary sources of income.

With the development of a money economy appears a specialization that is directed toward the urban centers. There has always been some natural specialization inasmuch as some plants do not grow well everywhere. The coconut, for example, does best in the lowlands. But the new specialization depends not only upon such natural factors as soil and climate, but also upon economic factors such as marketing facilities and the development of communications. This specialization can be observed generally in Southeastern Asia.

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Ochse and Terra found that in calories of food value the returns of the gardens proved to be slightly higher per hectare than those of the irri-

5: Dobby K-4 (no date) 1950 ALl Southeast Asia ALl

SOUTHEAST ASIA NUTRITION DENSITIES
(Average number of persons per rice-acre per annum)

Quinquennium	*Burma*	*Indo-china*	*Siam*	*Java and Madoera*	*Philip-pines*	*Malaya*
1916–20	1.23	1.75	1.66	4.12	3.13	—
1921–25	1.19	1.67	1.57	4.27	2.67	5.61
1926–30	1.14	1.61	1.57	4.50	2.69	6.13
1931–35	1.19	1.64	1.63	4.60	2.76	6.42
1936–40	1.25	1.63	1.74	4.96	2.79	7.02
1946–50	2.0	2.1	1.6	5.9	3.9	7.2

Because population and the net production of food have increased *pari passu*, it is important to examine the "nutrition density" (persons per acre under rice) since the surplus for export depends on low internal consumption of the Southeast Asia staple and high internal production. The countries of Southeast Asia pre-war showed considerable differences in nutrition density, from Malaya (the plantation-mining specialist) with 7.2 persons per rice-acre, to Siam (the rice-surplus specialist) with 1.6. Malaya, Java and the Philippines had nutrition densities much higher than the rest of neighbouring countries and in the case of Malaya and Java the nutrition density had been steadily rising, whereas in Burma, Indochina and Siam it was fairly static. Over the same period, the domestic consumption of rice per person sharply dropped (by 20-25 per cent) in Burma, Siam and Java and rose about 10 per cent in Indochina, Philippines and Malaya. The postwar figures available show considerable increases of nutrition density everywhere except in Siam, yet these were changes of degree, not of pattern.

Changing Internal Emphasis

Today the very crowded places are firstly, Middle and North Java, Lower Siam and the Red River Delta, where densities of over 1,500 people per square mile occur, with secondary crowdings in Lower Burma, the Lower Mekong, Central Luzon and the Visayas. These concentrations of people are pre-eminently in agricultural areas (Fig. 116), and they are in fact largely made possible by exceptional soil qualities within an area whose general soil fertility is low. These crowded areas have taken part in a commercialisation of local agriculture and their subsequent history has been firstly a

5: Dobby K-4 (no date) 1950 ALl Southeast Asia ALl

than their elongated forms, difficult interiors and cliffed, marsh or forest edges in fact justify. Rarely has any one of the major islands been the locale of a single people singly governed, homogeneous and integrated into an island-state. These large islands have been dispersive and fragmentive to the peoples in them.

Postwar Nationalism

The postwar effusion of nationalism in Southeast Asia is thus a paradox. It is a nationalism of plural societies and substantial minorities, without homogeneity inside the states, and without a nation, as understood in Europe, and very much a culmination of the insecurity and uncertainty produced by the divergent influences which have long been at work, breaking down old social integrations and their warm, human associations, substituting for them nothing but commerce and the new myth "economic man," cold, inexorable and not adequately or fully integrated with Southeast Asia people and their setting.

The devolution of Southeast Asia from colonial into nationalist units takes place at no propitious time. The cultivation of rice has been predatory, the accumulated effects of which are now showing in diminishing yields; new paddylands before the war were ceasing to be so easily available and the war threw a large proportion of the old lands out of cultivation. Rubber has found a competitor in synthetic rubber, and its production may repeat the history of sugar. Tin recovers from the war slowly because equipment has been lost. Plantation crops have lost labour, markets and opportunities. Yet Southeast Asia is still increasing its people faster than the world average. Its increase, however, has gone on at a slower rate in the already congested areas and at a faster rate in what had been the emptier areas of South Sumatra (with Javanese migrants), in Mindanao (with Filipinos), in Johore (by Chinese immigrants), as well as in Laos, Dutch Borneo and Inner Siam, by local increases. Thus Southeast Asia has been filling up, though there is little prospect yet of an even distribution.

Devolution

The Southeast Asia population is expanding now as the trade systems which provided its first impetus to expansion shrink and lose coherence. The atmosphere is one of relinquishing colonies, but under circumstances when they are involved in an international

7: Janlekha X-4,5 (1948-1953) 1956 AO7 Central Thai
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563 foreign army of occupation has preserved it from disruption.
565 The essential and distinctive character of a plural society
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571 is that it is dominated by economic forces, and, outside a few partly sheltered oases, Southeast Asia illustrates the capitalist system in its purest form.[18]

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171 Another common feature is the dominance of the agri-
433 cultural section of the population. The latest available
171 figures show the percentage proportions of population dependent on agriculture in the area as follows: Burma, 68; Indonesia, 66; Philippines, 69; Thailand, 85.[19] The same source indicates the proportions for various regions of the world as follows: North America, 20; Oceania, 30; Europe, 33; South America, 60; Asia, 70; and Africa, 74.

171 With the prevailing techniques of production and the
433 consequent low productivity per man, dominance of agriculture
434 means low per capita national income. When countries are grouped by level of economic development on the basis of per capita national income as of 1950, all the six countries of Southeast Asia -- Burma, Indo-China, Indonesia, Malaya, Philippines, and Thailand -- fall in the underdeveloped
443 group.[20] Moreover, there is in Southeast Asia a true surplus
464 population on the land in the sense that even under the
161 present methods of cultivation a sizeable fraction of the

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18. Ibid., p. 77.

19. Food and Agriculture Organization, 1953 Yearbook, Vol. VII.

20. Eugene Staley, The Future of Underdeveloped Countries (New York: Harper & Brothers, 1954), pp. 16-17.

7: Janlekha X-4,5 (1948-1953) 1956 AO7 Central Thai
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man-power could be removed without significantly reducing food output. Under this circumstance, not only the productivity of agriculture but also the opportunity for urban industry to grow and flourish is hampered. A major obstacle to development of efficient manufacturing in underdeveloped countries is the small size of the market, which is in turn a consequence of the low purchasing power of the bulk of the people, most of whom get their living from the land.[21]

Southeast Asia has been characterized by its rapid growth in population. Broadly speaking, the region has been until recently one of very thin population. It seems probable that the whole of Southeast Asia in 1800 contained only about ten million people. Malaya then contained about a quarter million people, Java about four million, and Burma probably less than two million. It was, even at the end of the 18th century, a zone of labor shortage. But the last 150 years brought tremendous changes in population. It has been a period of tremendous population increases, causing people to swarm upon the more fertile areas, upon deltas and volcanic cones where people had not clustered before. By the quinquennium 1916-20, the total population of Southeast Asia had become 84 million, by 1936-40, 120 million, and by 1946-50 it was nearly 145 million.[22] This rapid population growth has been a great concern to students in economic

21. Ibid., p. 253.

22. E. H. G. Dobby, Southeast Asia (London: University of London Press Ltd., 1951), p. 386.

7: Janlekha X-4,5 (1948-1953)1956 AO7 Central Thai
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development who fear that these countries might not be able to expand their production faster than population expands, in which case the result of economic development efforts will be a greater quantity of people with little or no gains in the quality of living conditions. In Zinkin's words, "The growth of population and the impact of the West have between them, in the last hundred years, so upset the delicate balance that most of the Asian countryside is now bankrupt . . . . The alarming feature of the peasant economy of Asia is not simply that it is desparately poor. It is that in recent decades, and in most countries of Asia, it has been growing poorer. It is a changing, dynamic economy. But it has been changing for the worse."[23]

Poverty is not new in Southeast Asia. What is new is the awareness of poverty and the conviction that something can be done about it. "A great change", reported Harold Butler, "is stirring Eastern society. The consciousness of misery has been created by the growing realization that it is not the inescapable lot of the poor and that chances of better life now exist."[24] All of the countries in Southeast Asia have within the past decade set up official agencies charged with planning and promoting economic development; and for international assistance to hasten it, is the constant

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23. Zinkin, op. cit., p. 34.

24. Harold Butler, Problems of Industry in the East (Geneva: International Labor Office, 1938, Studies and Reports, Series B, No. 29), pp. 65-66.